

ABSTRACT OF THE DISCLOSURE

A system and method for measuring a voltage in a body part are described. The system includes a multiplexing unit, and N body leads for electrically connecting the multiplexing unit to the body part. The system also includes a controller switching unit for allowing a current to flow through the body part between two body leads, n_1 and n_2 of the N body leads, and a resultant voltage to be measured between two body leads, n_3 and n_4 of the N body leads, where $n_1 \neq n_2$ and $n_3 \neq n_4$, but where n_1 n_2 n_3 and n_4 need not otherwise be distinct.